

## REMARKS

In accordance with the foregoing, claim 8 has been amended. Claims 1-16 are pending and under consideration.

Claims 1, 8, 11 and 14 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,953,099 to Jourjine in view of U.S. Patent No. 4,518,866 to Clymer and U.S. Patent No. 5,119,438 to Ueda et al.

In addition to these three references, the Examiner cites other references for rejecting the remaining dependant claims.

Although not clear from the Office Action, it appears the Examiner believes that  $td(t)$  and  $tm(t)$  are analogous to the claimed first and second time spans. However, according to column 2, lines 24-26, these variables refer to the activation timing of a cell. The activation timing is defined as the time between the beginning of a code length cycle and a pulse length cycle. Therefore, the activation timing describes the elementary behavior of each cell in the network. It can be interpreted as a time delay before a cell creates a pulse.

In contrast to this, the claimed first and second time spans relate to a time span during which a neural network is trained with a sequence of input quantities. Although the claims are not so restricted, the first and second time spans may be much longer than the activation time in Jourjine. The claimed first and second time spans relate to macroscopic training of an entire neural network, whereas the activation timing in Jourjine relates to the microscopic behavior of a single cell in the network.

Even if one compares the claimed invention with the references on a more mathematical level, the references are deficient. Based on the Examiner's citation of column 4, line 66 through column 5, line 2 of Jourjine, it appears the Examiner may believe that  $td(t)$  is analogous to the claimed first and second time spans. Based on the Examiner's citation of column 5, lines 46 and 47, it appears the Examiner believes  $Bm(t)$  is analogous to the difference between the first discrimination value and the second discrimination value. However,  $Bm(t)$  is not defined in this manner. Further, with the present invention, when there is no difference, the time period is shortened. On the other hand, referring to column 5, line 47 of Jourjine, if  $Bm(t) = 0$  there is no change in "said timing." In Jourjine. For consistency, "said timing" should refer to  $td(t)$ . However, "said timing" refers to  $tm(t)$ . In addition, columns 5 and 6 of Jourjine refer to Fig. 4. It is questioned how the discrete component shown in Fig. 4 represent a neural network.

In conclusion, the independent claims relate to a training method for a neural network,

whereas Jourjine describes elementary mechanisms within individual cells of a neural network.

Neither Clymer nor Ueda compensates for deficiencies in Jourjine. Clymer describes a circuitry for a neuron. That is, like Jourjine, Clymer describes an elementary mechanism within individual neurons. Values are adjusted in order to control the firing behavior of the individual neurons. This microscopic mechanism does not relate to the macroscopic training claimed. The claimed first and second time spans as well as the claimed first and second discrimination values have no equivalent in Clymer.

Although Ueda does not appear to be involved with the microscopic functioning of individual neurons or cells, Ueda does not disclose or suggest training a neural network with a training sequence of input quantities, and Ueda does not suggest decreasing time spans, as claimed.

The remaining references are cited simply for the limitations of the additional dependant claims. These references do not compensate for deficiencies discussed above. Accordingly, the prior art rejections should be withdrawn.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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